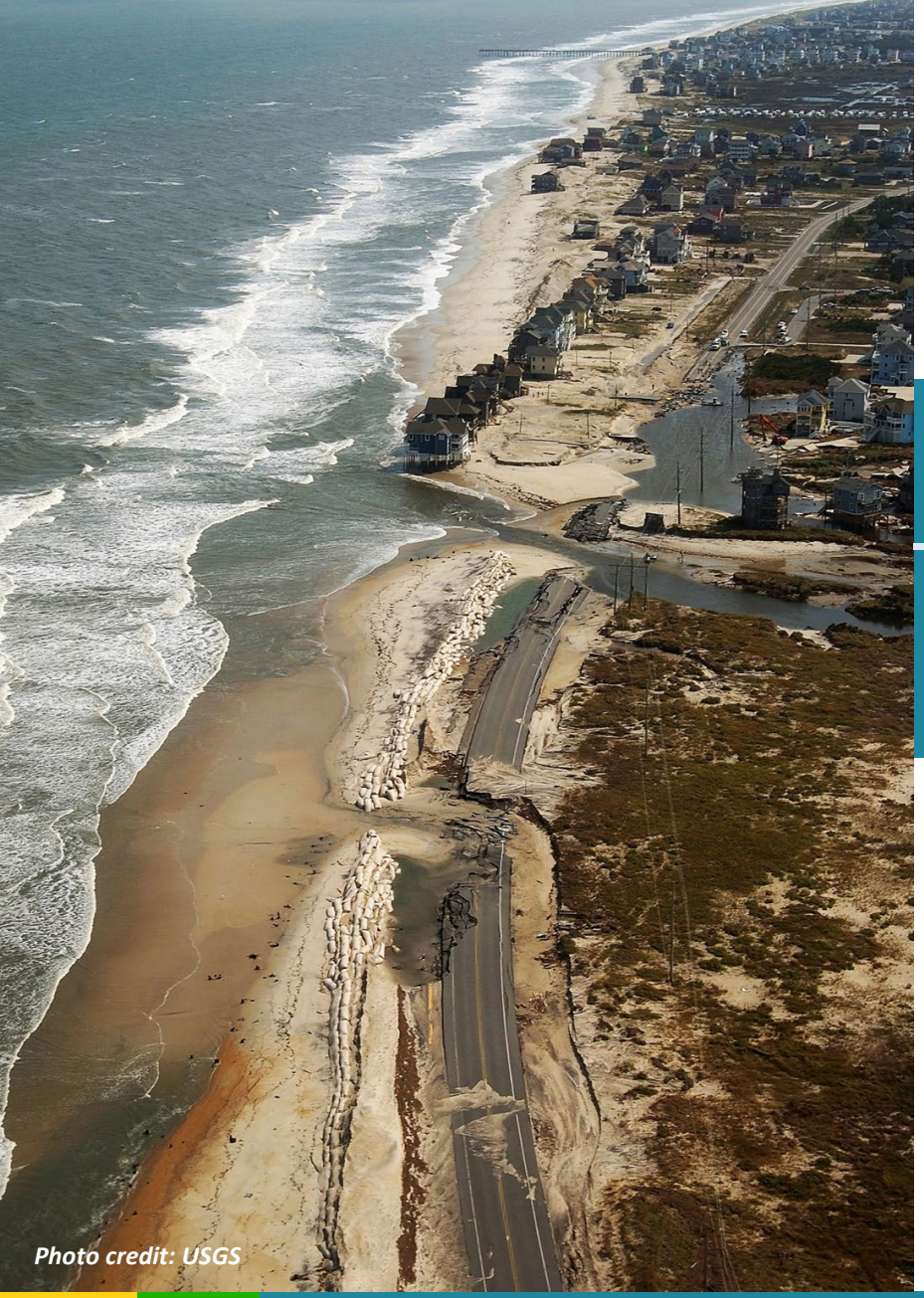


Photo credit: USGS

USCRP
US COASTAL RESEARCH PROGRAM

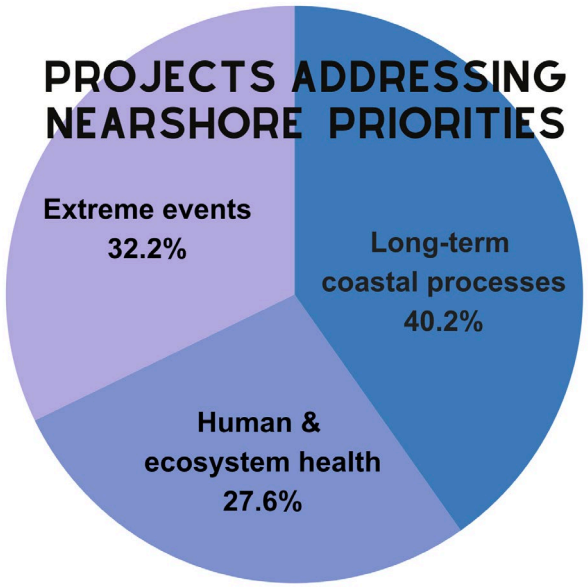
U.S. Coastal Research Program: Program Updates

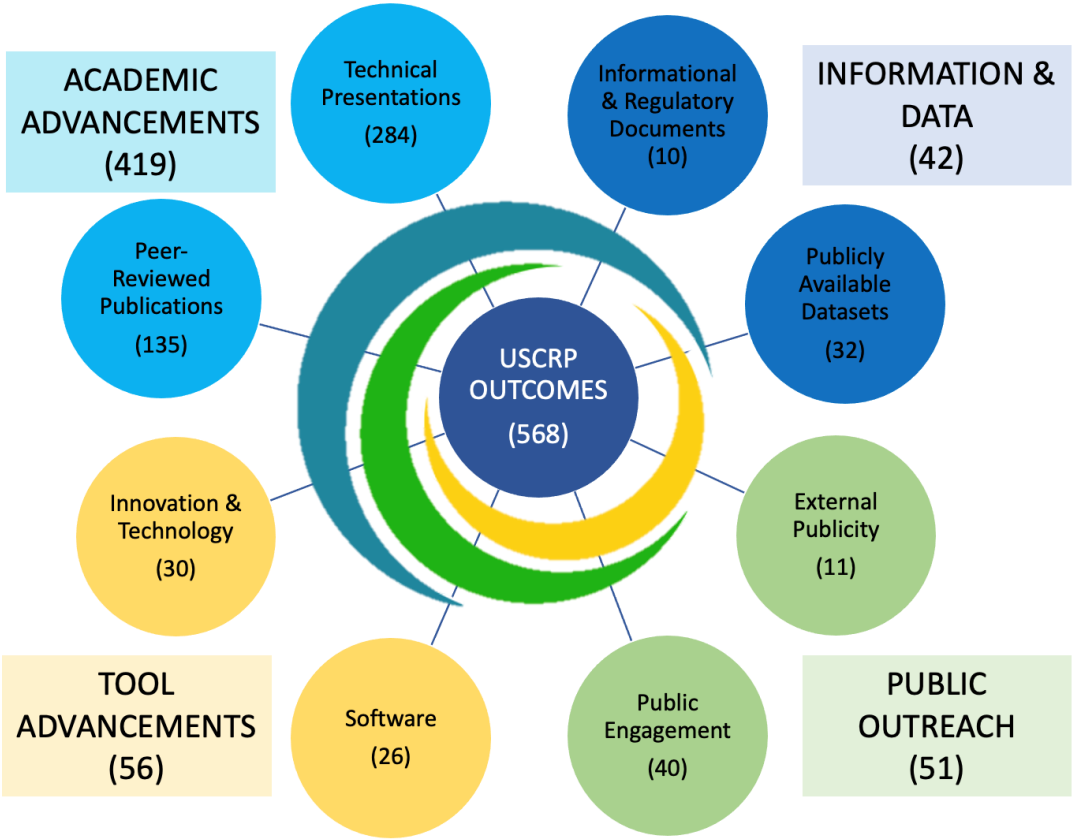
January 7, 2025
USCRP Monthly Member Meeting

USCRP Overview (2016-2023)

A National coastal effort to coordinate Federal activities, strengthen academic programs, & address coastal community needs.

- 77 proposals funded across 28 states
- $23.5M awarded ($3-5M/year)





OUR PARTNERS

USCRP
US COASTAL RESEARCH PROGRAM

2024 Accomplishments

- Hosted USCRP 2024 Decadal Visioning workshop with over 115 participants from federal agencies, stakeholder groups, and academia.
  - Developed and distributed comprehensive survey to gather detailed feedback from the community on themes, content, and priorities for the next decade
- SEDiment transport COllaborative LABoratory Experiment (SEDCOLAB) academic partners visited CHL July 15-17, 2024, for experiment planning and coordination across research teams
- Hosted ASBPA Coastal Conference USCRP/Sea Grant sessions
- Hosted 12 USCRP Monthly Project Update Meetings with over 40+ attendees

2024 Accomplishments: 2024 Awards

Over $5.5 million in funding for selected 2024 projects which addressed program priorities by reinvesting in previously collected data and resources to explore new science questions, hypotheses, and problems.

- Funded research topics include:
  - probabilistic coastal hazards assessments
  - long-term assessment of sea turtle nesting
  - high-energy environments for living shorelines
  - climate and geography impacts on flooding
  - aquatic invasive species impacts on fisheries
  - coastal infrastructure retrofits
  - multi-decadal morphologic change
  - salt marsh and sedimentation processes
  - shoreline responses to extreme weather
  - groundwater impacts on infrastructure
  - long-term evolution of coastal systems
  - impacts of precipitation on water quality
  - long-term marsh evolution

Virginia Tech & University of Maryland

Physically Informed, Equitable, and Efficient Hurricane Surge Characterization

Indiana University

Climate Resilience and Adaptation of Communities to Storm-Related Flooding in the US Great Lakes Watershed 2024

University of California Los Angeles

Analyzing and Modeling Hybrid Dune Resilience to Energetic Waves

Learn more about 2024 USCRP Funded Projects!

2024 Accomplishments: Student Training & Professional Development Week

Goals:

- Increase participation and exposure of coastal students, particularly from underrepresented groups, to laboratory experiments and techniques.
- Provide students from USCRP projects with the opportunity to get a more in-depth view CHL laboratory facilities where they will be conducting experiments in 2025.
- Provide all participants with professional development opportunities and ideas for potential future career paths.

2024 Accomplishments: Student Training & Professional Development Week

Student Attendee Breakdown

- 28 students
  - 15 PhD Students
  - 8 Masters Students
  - 5 Undergraduate Students
- 19 Universities represented from across the U.S.

2025 USCRP Plans

- USCRP to Host a Federal Agency Leadership Summit
  - Goal- using 2024 Decadal Workshop outcomes, develop a Federal USCRP Decadal Strategy and an implementation plan
- Announce 2025 RFP
- Continue coordination with SME report writing team and publish the Future of Coastal Processes Research Report
- Publish journal article on the coastal workforce
- Coordinate USCRP special issue on Natural and Nature-Based Features (NNBF)
- Conduct the SEDiment transport COllaborative LABoratory Experiment (SEDCOLAB)

USCRP
US COASTAL RESEARCH PROGRAM

JUNE 11 – JUNE 13

Hilton St. Petersburg Bayfront – 333 1st Street, SE

Decadal Visioning Workshop

THE FUTURE OF COASTAL PROCESSES RESEARCH

2024

Workshop Recap

USCRP 2024 Decadal Visioning Workshop

Workshop Objective: *Bring together federal agencies, stakeholders, and academia with the goal of* ***identifying and prioritizing*** *key management* ***challenges*** *and* ***high priority science gaps*** *that will* ***guide*** *the next decade of* ***coastal research***.

Pre-Workshop Information Gathering

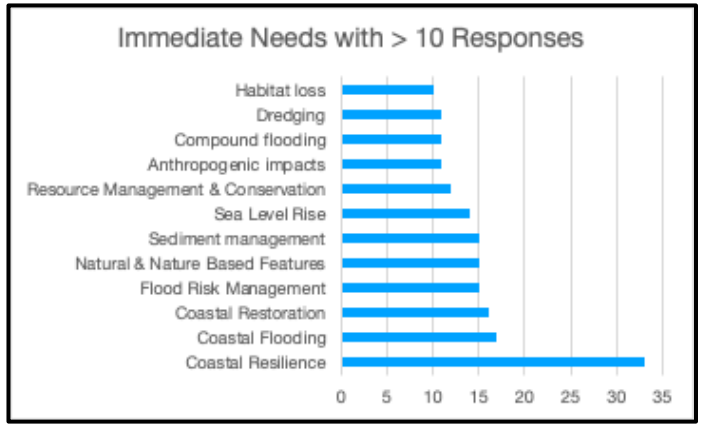
Federal Agency Partner Survey & Scoping Session

- Top immediate coastal research needs and technical challenges relate to **sediment transport** and **compound flooding.**
- Top long-term priority coastal topics relate to **flood risk reduction.**

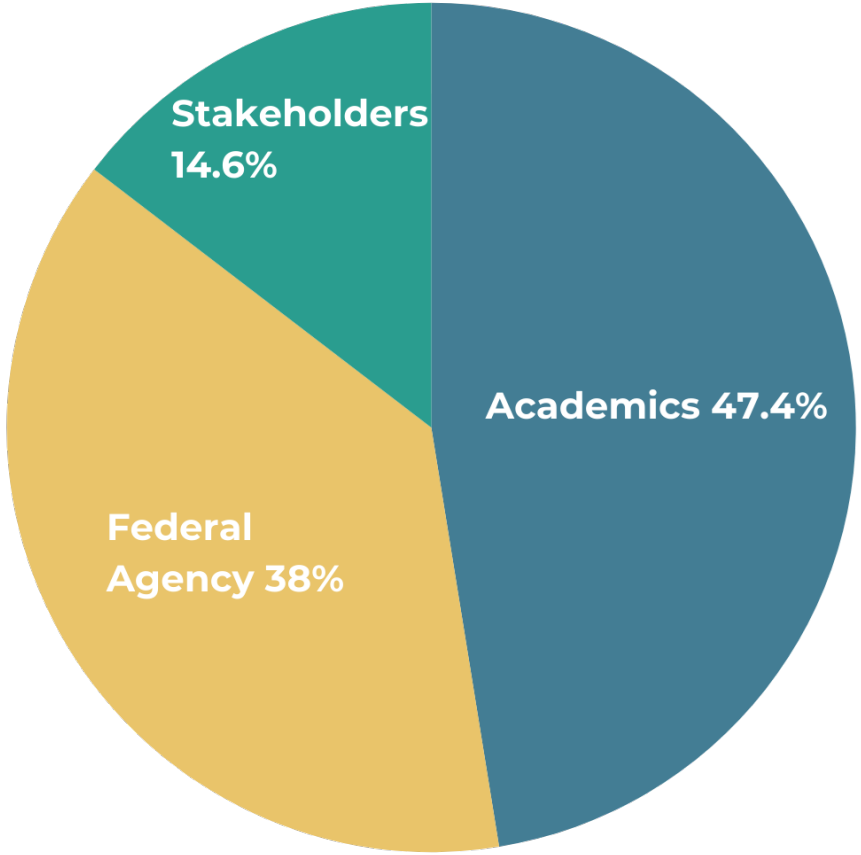
Immediate Needs & Technical Challenges	NOAA	USGS	USACE	DOT	NRL	NASA	BOEM	FEMA	NPS
Compound flooding tools			x	x	x			x	X
Sediment transport processes			x		x		x		X
Longterm trend data	x			x				x	x
Climate change impact		x	x				x		x

Stakeholder Survey & Scoping Session

- **Coastal resilience** was the most significant immediate challenge faced by stakeholders.
- Coastal stakeholders most common shortcomings include **research, outreach, and data.**

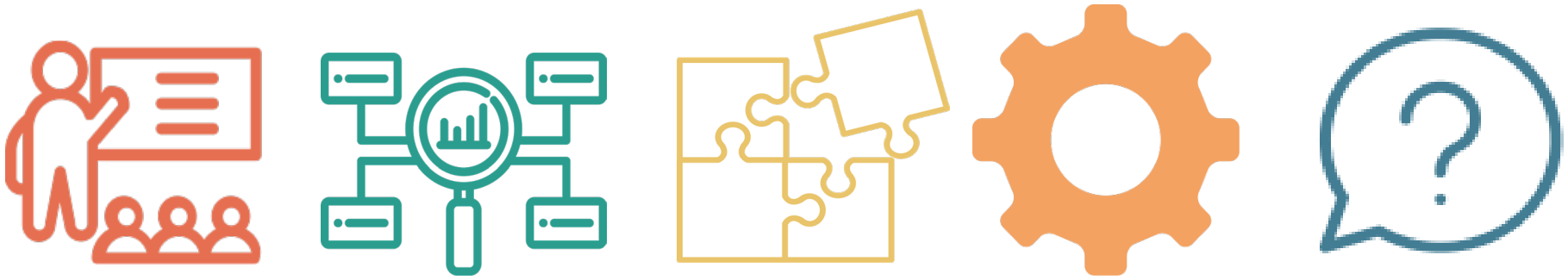


2024 Decadal Visioning Workshop Participants



USCRP 2024 Decadal Visioning Workshop

Working through challenges and solutions to actionable research.



Presentations

Speakers discuss progress and perspectives on coastal challenges and priorities for the next 10 years of coastal research.

Community Needs

What challenges will we face in the next 10 years?

Co-Developed Solutions

How do we move forward to addresses these challenges?

Tools & Approaches

What tools and implementation strategies do we need to achieve solutions?

Research Questions

What research questions need to be addressed for successful tools and approaches?

Decadal Visioning Workshop Takeaways

- Research is needed at **all scales** to transition from **foundational science** to **operational models** to **public information**.
- Need to collaborate **across disciplines** to **co-develop** effective **solutions** to coastal challenges.
- Interdisciplinary work must be at the right scale, **intentional**, **well-planned**, and **inclusive**.
- Need to incorporate influences of **humans and ecosystems** to understand current and future **shoreline change**.
- **Nature Based Solutions** should be considered as a **continuum**.
- Need methods to measure **effectiveness** in **adaptation strategies.**

Workshop Priority Coastal Challenges Identified

Coastal Flooding & Extreme Events

Adaptation

Sediment Transport & Morphologic Change

Ecosystem Restoration & Water Quality

USCRP
US COASTAL RESEARCH PROGRAM

Decadal Visioning Workshop

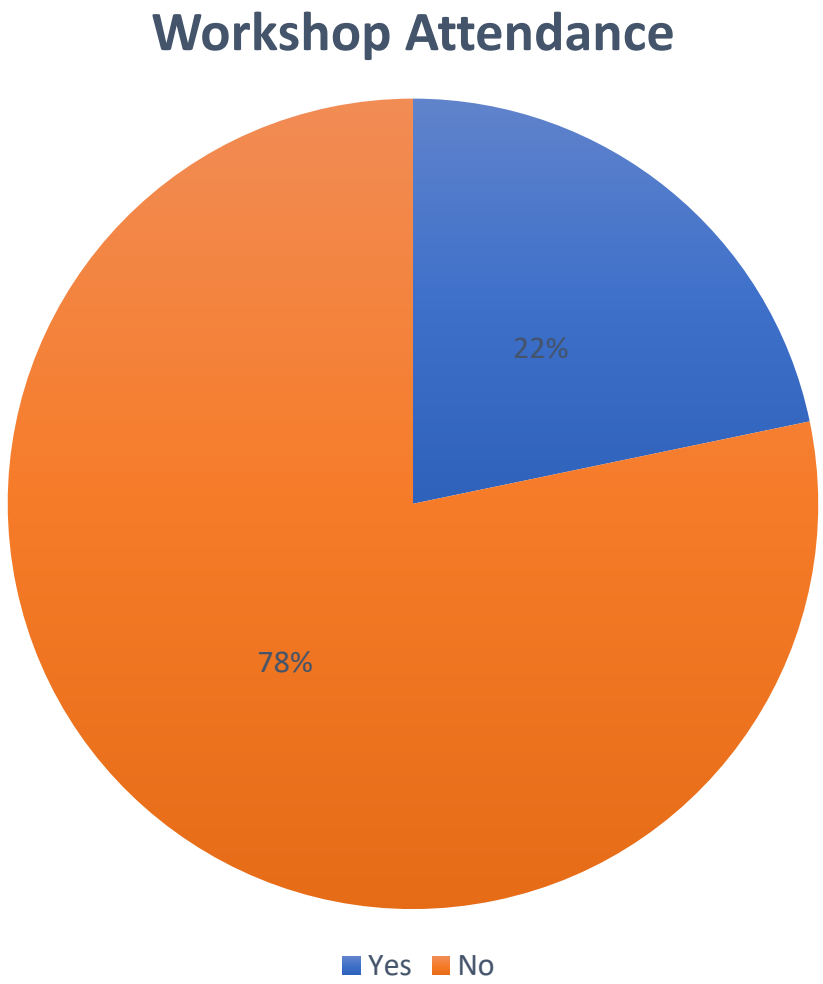
THE FUTURE OF COASTAL PROCESSES RESEARCH

2024

Decadal Visioning Technical Survey Overview

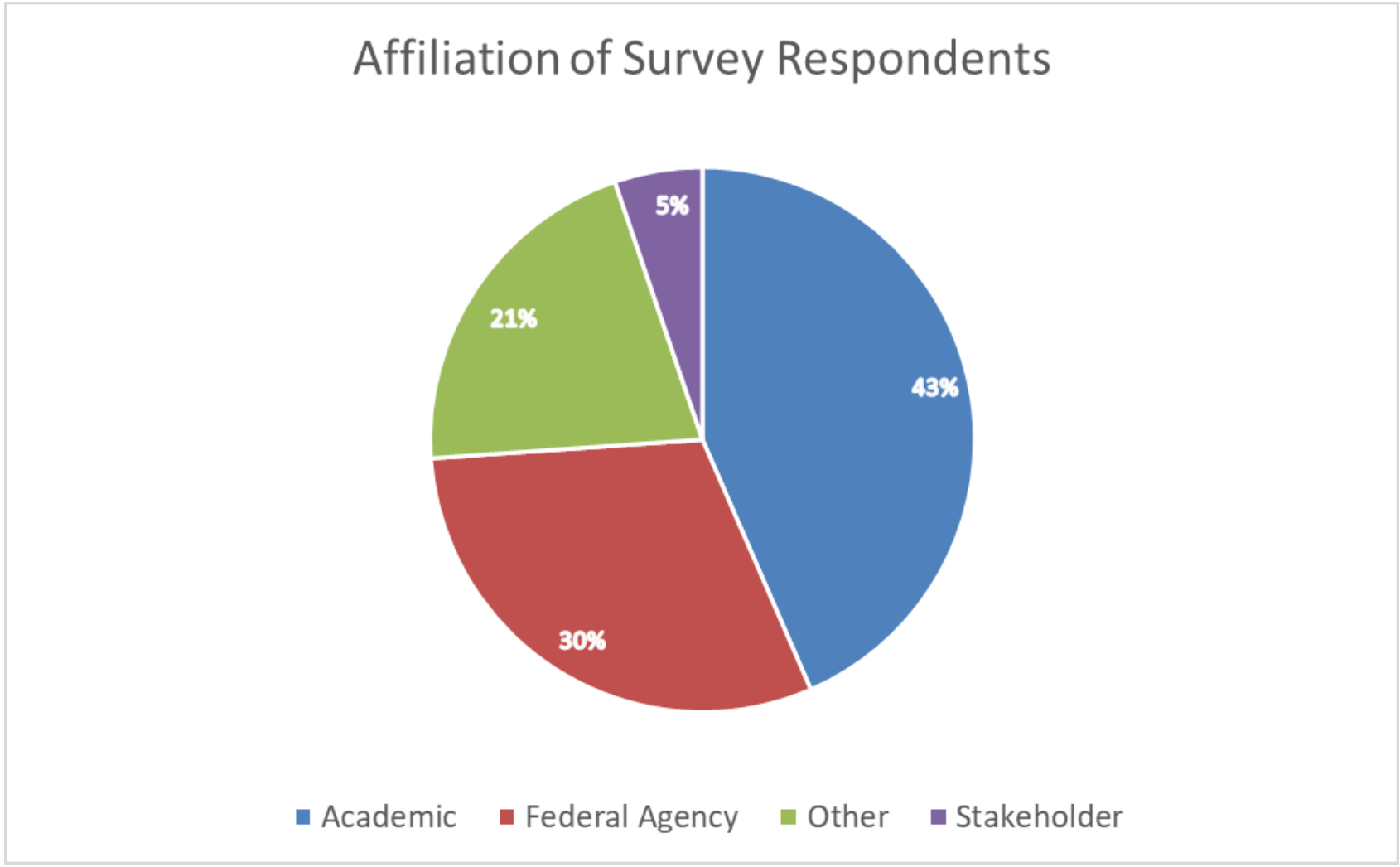
Did you attend the 2024 Decadal Visioning Workshop?

Responses: 115



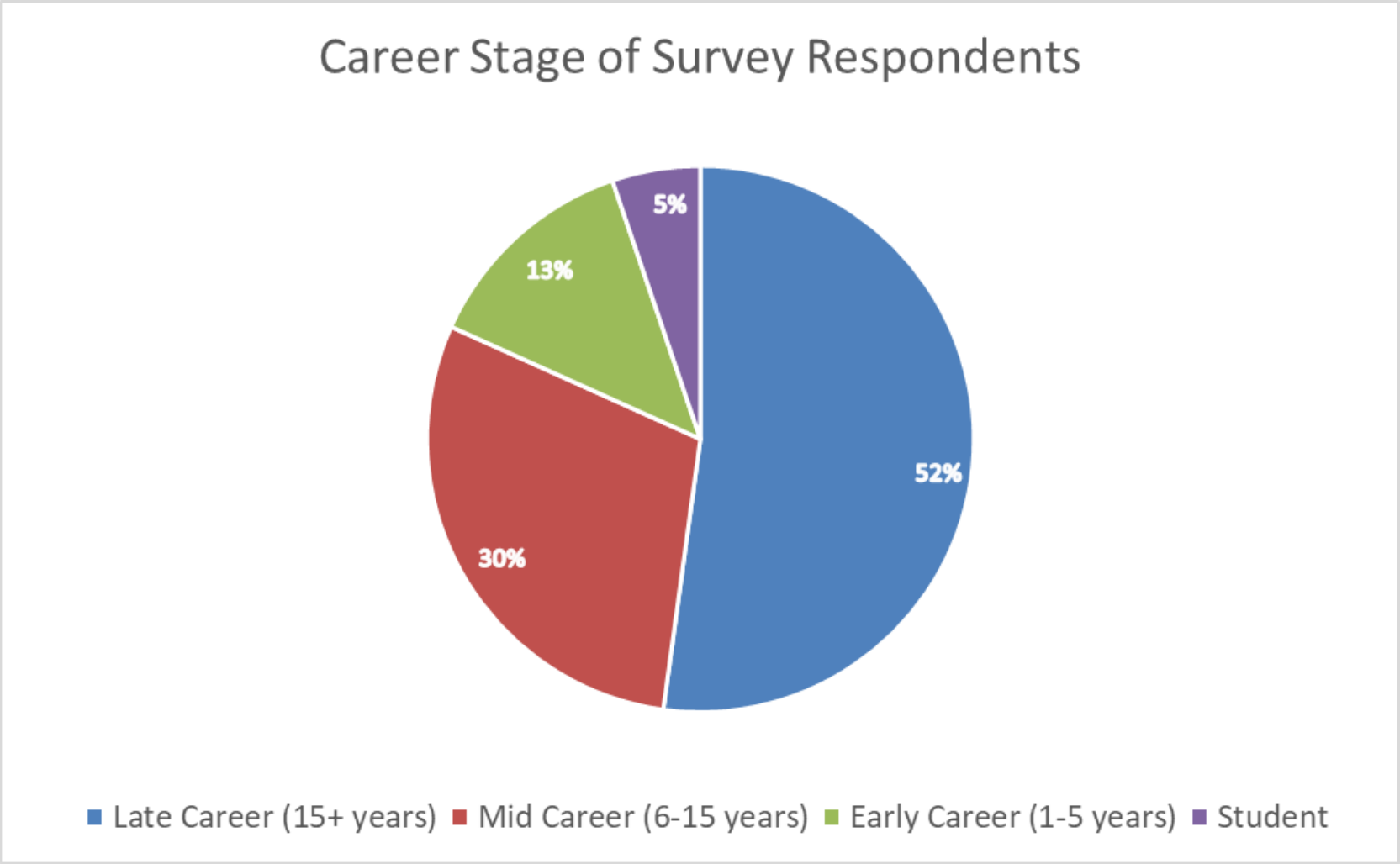
Q3: Please categorize your affiliation:

Responses: 115



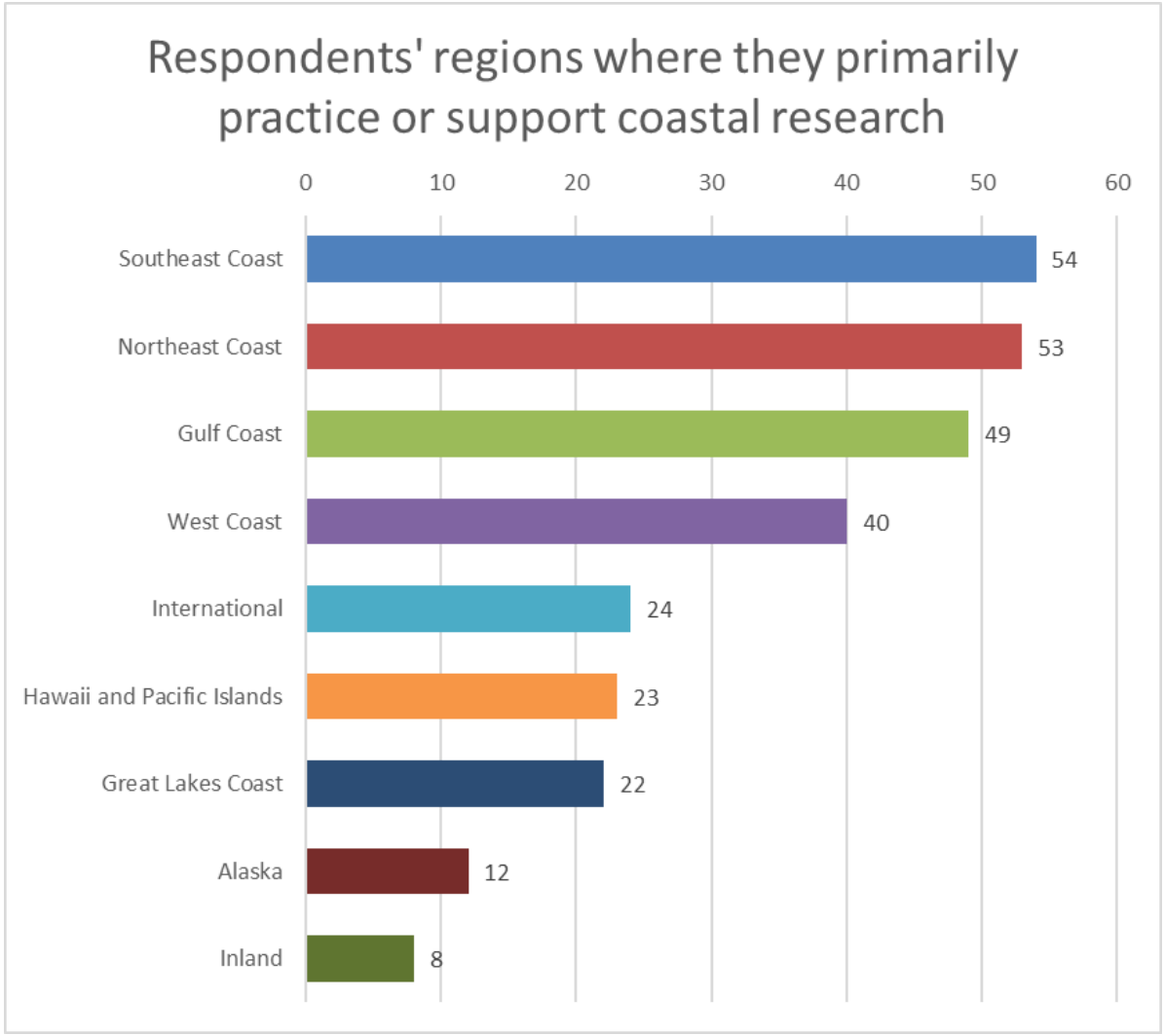
Q4: Please categorize your career stage:

Responses: 115



Q5: Select regions where you primarily practice:

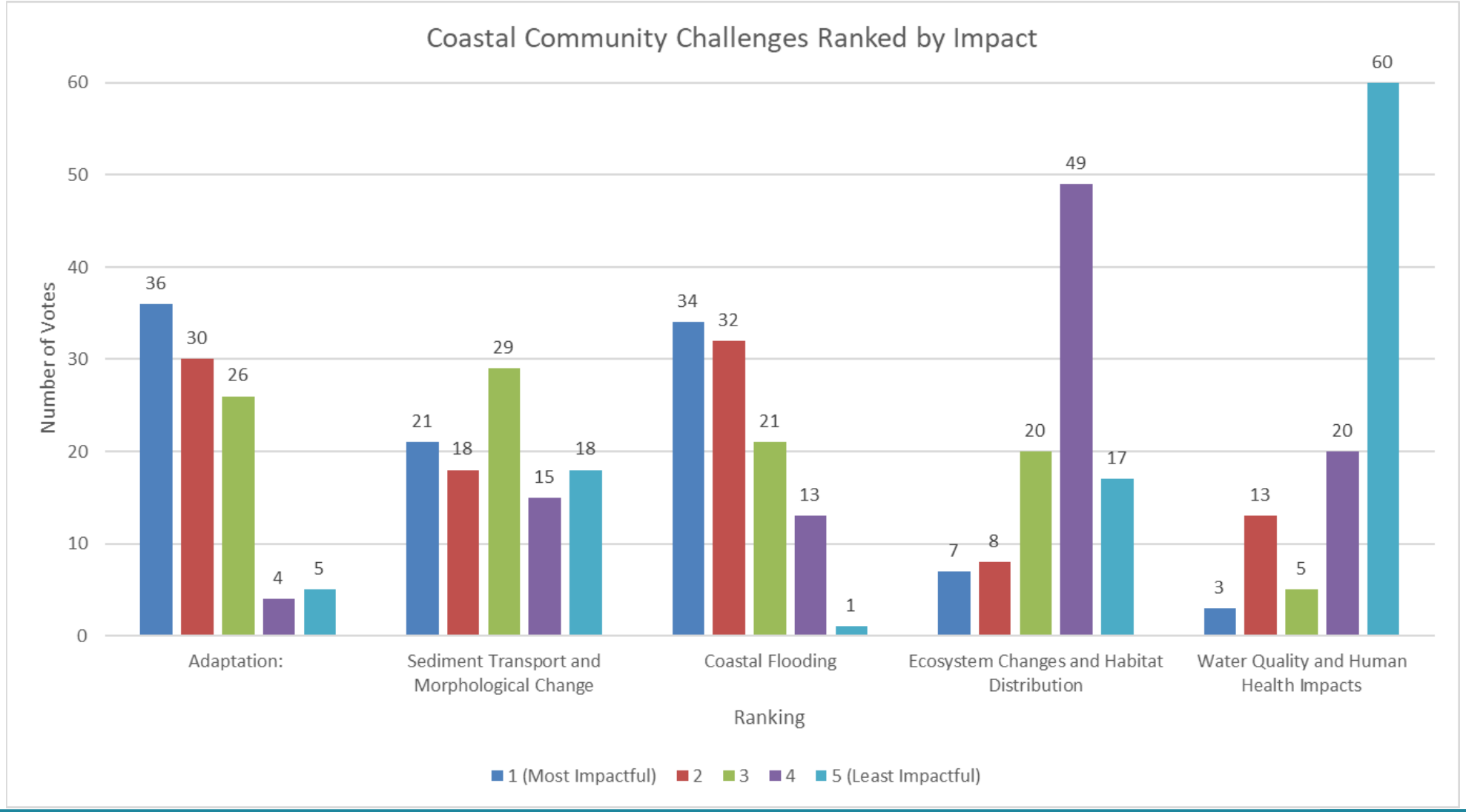
Responses: 115



Q8: Rank the most pressing and impactful topics to address for coastal community resilience.

Adaptation & Coastal Flooding ranked MORE CRITICAL

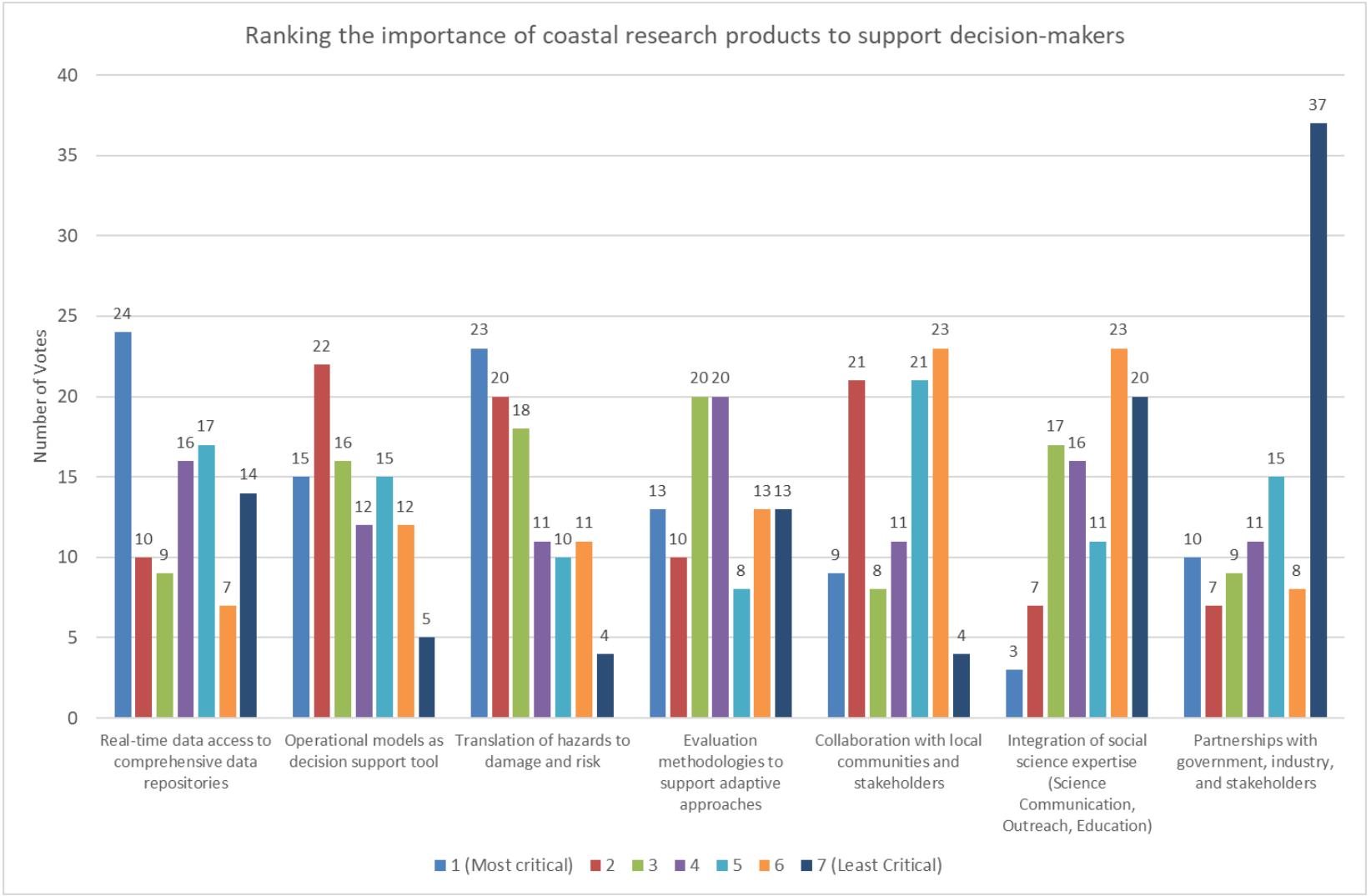
Ecosystems & Water Quality ranked LEAST CRITICAL



Q9: Rank the following needs for applying the results of coastal research to support decision-makers.

Data, Models, and Methods were ranked MORE CRITICAL

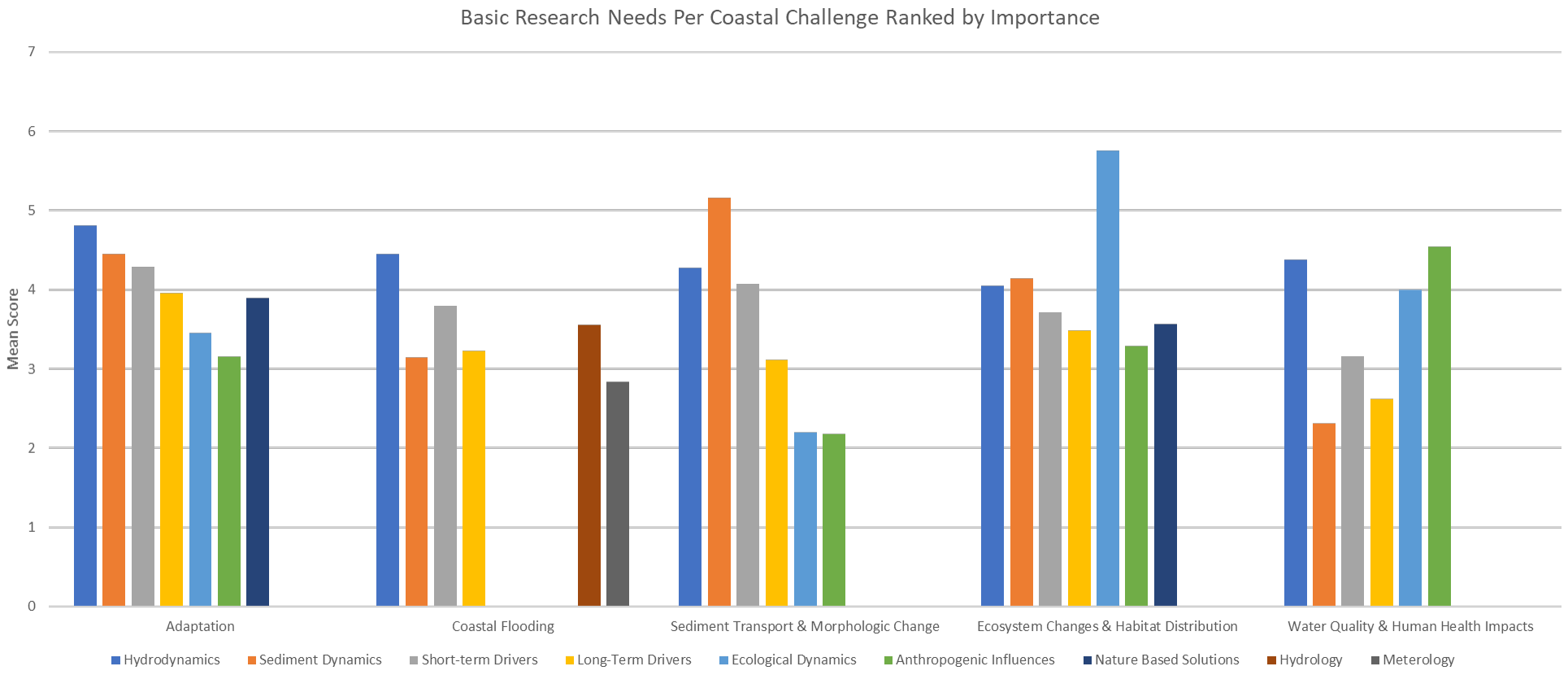
Collaboration with locals, integration of social science, & partnerships with others were ranked LEAST CRITICAL



Q: Rank the following basic research topics based on their importance in understanding X and the associated impacts.

Understanding <u>hydrodynamics</u> is in top ranking for all challenges.

<u>Short-term drivers</u> more important than <u>long-term drivers</u>.



Applied Research

Citizen Science is least important.

Computing infrastructure is not critical.

Observations

	Fixed-location in-situ data collection	Mobile and rapidly deployable instrumentation	Long-term coastal observing facilities	Process-study collaborative field and laboratory experiments	Sensor development	Data standardization	Remote sensing capabilities (e.g., satellite, Lidar)	High-resolution topographic and bathymetric data	Improved processing infrastructure (HPC, Cloud computing, big data)	Holistic assessments of study areas (watershed/region)	Citizen science
1 (Most critical)	16	6	10	2	0	1	4	8	1	9	0
2	12	15	10	3	1	5	3	6	0	2	0
3	7	18	11	3	2	2	4	5	3	0	2
4	5	6	8	13	3	3	10	4	1	4	0
5	4	4	3	12	8	4	10	4	2	1	5
6	4	4	6	6	12	7	6	7	1	2	2
7	4	0	4	5	11	11	9	3	3	4	3
8	2	2	1	7	7	10	6	13	3	4	2
9	1	2	4	2	8	4	2	4	23	5	2
10	0	0	0	3	3	7	2	3	11	22	6
11 (Least critical)	2	0	0	1	2	3	1	0	9	4	35

Modeling

	AI/ML model development & application	Developing physics-based numerical models coupled across disciplines and scales	Hybrid modeling approaches (i.e., physics-based models combined with ML models)	Coupled natural human systems modeling	Improved model physics and parameterizations	Quantify and reduce uncertainty in measurements and models	Developing operational models as decision support tools	Model-data assimilation	Improved computing infrastructure (HPC, Cloud computing, big data)
1 (Most critical)	10	16	9	6	3	2	2	2	2
2	6	13	8	3	6	6	9	0	1
3	11	6	11	5	5	6	2	6	0
4	6	1	7	11	8	13	2	1	3
5	6	6	8	4	8	5	7	5	3
6	4	6	5	6	8	9	4	8	2
7	5	2	1	8	8	8	13	4	3
8	1	2	3	4	5	2	9	20	6
9 (Least critical)	3	0	0	5	1	1	4	6	32

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Thank you!
Questions?

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